

# Homemade Explosives Recognition Guide

*Homemade Explosives*

*Chemical Components*

*Manufacturing Equipment*

All individuals handling this information are required to protect it from unauthorized disclosure. This information should be disseminated on a need-to-know basis.

This document is not for public use, but is intended for use by military, federal, state, and local agencies as a reference for training and operations by emergency personnel in preparing for and responding to a terrorist incident.

## **WARNING**

- DO NOT handle any unknown chemicals or explosive materials
- Consider all unknown substances and materials dangerous
- Apply this guide with previous training and experience
- Contact your EOD or Bomb Squad immediately if a possible homemade explosives production area has been identified

Please enter your EOD/Bomb Squad contact information here:

---

---

---

The information in this guide is for recognition and awareness purposes only. The information is general and may not reflect the most recent threats.

Date of publication: 12 March 2010

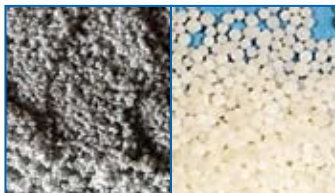
<b>INTRODUCTION</b>	<b>1</b>
<b>HOMEMADE EXPLOSIVES</b>	<b>3</b>
Ammonium Nitrate Mixtures.....	5
Black Powder .....	6
Chlorate/Perchlorate Mixtures.....	7
EGDN/NG Mixtures.....	8
HMTD.....	9
Hydrogen Peroxide Mixtures .....	11
MEKP .....	12
TATP .....	13
Urea Nitrate.....	14
<b>CHEMICAL COMPONENTS</b>	<b>15</b>
Acetone .....	18
Aluminum Powder .....	19
Ammonium Nitrate.....	20
Citric Acid .....	22
Ethylene Glycol.....	24
Glycerin .....	26
Hexamine.....	27
Hydrochloric Acid.....	28
Hydrogen Peroxide.....	29
Magnesium Powder.....	31
Methyl Ethyl Ketone .....	32
Nitric Acid.....	34
Nitromethane .....	35
Potassium Chlorate .....	36
Potassium Nitrate .....	37
Potassium Permanganate.....	39
Sodium Chlorate.....	41
Sulfur .....	42
Sulfuric Acid .....	43
Urea.....	45
<b>MANUFACTURING EQUIPMENT</b>	<b>46</b>
Grinders.....	48
Mixers and Stirrers .....	49
Ice Baths.....	50
Distillers.....	51
Filters .....	52
Safety Equipment.....	53

This booklet is a quick reference guide describing indicators and warnings related to homemade explosives. It is intended to aid military, federal, state, and local law enforcement personnel to visually recognize the materials, chemicals, and equipment associated with the manufacture of homemade explosives. The examples in this guide were selected based on historical incidents, intelligence on emerging threats, and the commercial availability of materials and equipment used in the manufacture of homemade explosives.

- Some clandestine labs may produce both drugs and homemade explosives. Remember to look at the totality of the circumstances.
- If you think you have found a homemade explosive, DO NOT HANDLE. Contact an expert immediately.
- All explosives are sensitive to heat, shock, friction, and electrostatic discharge; sensitivity varies based on the type of

# HOMEMADE EXPLOSIVES

Homemade explosives can be liquid, powder, or granules and can be made using commonly available chemicals and equipment.



*Ammonium Nitrate Mixtures*



*Black Powder*



*Pyrotechnics*



*Chlorate/Perchlorate Mixtures*



*EGDN or NG*



*Pure HMTD*



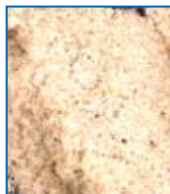
*HP and  
Nitromethane  
or Ethanol*



*MEKP*



*TATP*



*Urea Nitrate*

*If you notice.....*

- Predominantly dry chemical components
- More granular than powdery product
- Grinding equipment (but not necessary)
- Simplistic safety equipment (gloves, dust masks, etc.)

*Then you might review the information on...*

# Ammonium Nitrate Mixtures

## **Ammonium nitrate and aluminum**

- Silvery, gray
- Powder or granules
- Odorless



*Ammonium Nitrate and Aluminum*

## **Ammonium nitrate and racing car fuel**

- White
- Powder or granules, moist
- Mild, fruity, but disagreeable odor



*Ammonium Nitrate and Fuel Oil (ANFO)*

## **Ammonium nitrate and confectioner's sugar**

- White
- Powder
- Slightly sweet odor
- Attracts sugar ants

## **Ammonium nitrate and fuel oil (ANFO)**

- Off-white to pinkish
- Granules or spherical pellets (prills)
- Fuel oil or diesel odor



*Ammonium Nitrate and Fuel Oil (ANFO)  
Powder*

## **Hazards**

- Sensitive to impact, friction, static spark, and heat
- Ammonium nitrate by itself can be explosive in hot, confined areas



5y-201ottechnicT 15.447 .01 Tm (Gr) 1001otaywder

- Powder or granules
- Gray, black
- Faint, indistinct odor
- Sulfur odor (rotten eggs) when burned

- All mixtures are odorless

## **Flash Powders:**

- Powder or granules
- Silvery, gray
- Other names:  
*Pyrotechnic Powders*



*Flash Powder*

## **Poor Man's C4:**

- Putty-like, solid or clumps
- White



*Poor Man's C4*

## **Armstrong's Mix:**

- Powder
- Red

## **Hazards**

- Extremely sensitive to impact, friction, static spark, and heat



*Armstrong's Mix*

- Oily, viscous liquid
- Colorless to dark yellow
- Odorless
- Other names for EGDN: *Nitroglycol, Dinitroglycol, Glycol Dinitrate, Ethylene Dinitrate*
- Other names for NG: *Trinitroglycerine, Glycerol Trinitrate*

## Hazards

- Extremely sensitive to impact, friction, static spark, and heat
- Inhalation may cause headaches, dizziness, chest pain, and low blood pressure



*EGDN or NG*

## *Ethylene Glycol Dinitrate/Nitroglycerin*

**EGDN/NG Mixtures**  $\text{C}_2\text{H}_4\text{N}_2\text{O}_6/\text{C}_3\text{H}_5\text{N}_3\text{O}_9$   
*Homemade Explosives*

### Hexamethylene Triperoxide Diamine

- Crystals or powder
- Colorless to white
- Dullness like flour
- Solids settled at bottom and floating on top of a liquid-filled container
- Consistency of confectioner's sugar in dry state or pure form
- Can smell like dead fish
- Fresh product may have little or no odor
- Additives can alter the physical appearance
- Precursor colors will affect HMTD color
- May be stored in refrigerator or freezer

### Hazards

- Contact with metals may produce dangerous chemical reactions
- Extremely sensitive to impact, friction, static spark, and heat



*Solids Settled at Bottom of Container*



*Crystal HMTD*



*Pure HMTD*

## HP Mixtures

*HP and Nitromethane  
or Ethanol*

- Liquid or semiliquid gel
- Color varies with additives
- Slightly pungent, caustic odor (generally)
- Odor similar to chemical component

## Hazards

- Large quantities can self-heat and ignite if in sunlight or elevated room temperatures
- Extremely sensitive to impact, friction, static spark, and heat



*HP and Flour*



*HP and Cumin*



*HP and Black Pepper*



*HP and Coffee*

- Liquid
- Clear, colorless
- Agreeable odor
- Other names:

## Triacetone Triperoxide

- Crystals or powder
- Sugar-like appearance
- Colorless or white
- Solid TATP settles to the bottom of a liquid-filled container
- Additives can alter the physical appearance and color
- Fruity smell, like acetone but gentler
- Old TATP smells very acid, like vinegar
- Evaporates in an open container
- If stored in a closed jar, glass may look frosted
- May be stored in a refrigerator or freezer
- Other names: *Acetone Peroxide*, *Mother of Satan*



*Crude TATP*



*Pure TATP*



*TATP*

## Hazards

- Extremely sensitive to impact, friction, static spark, and heat



- Crystals
- Colorless to off-white

# CHEMICAL COMPONENTS

Chemicals may be found in cool dry areas in tightly sealed containers. None of these chemicals require refrigeration, but all may be stored there. All chemicals listed can be purchased over the Internet.

*Examples, Not All-Inclusive*



*Acetone*



*Nail Polish Remover*



*First Aid Cold Packs*



*Citric Acid*



*Sour Salt*



*Antifreeze*



*Camp Stove Fuel*



*Hair Products*



*Disinfectant*



*Pool Chemicals*

## CHEMICAL COMPONENTS

*Examples, Not All-Inclusive*



## **BINDERS**

Some chemicals may be used to hold certain explosive mixtures

- Liquid

- Powder
- Silver, gray, black
- May also look whitish
- Odorless
- Small quantities, up to a gallon: plastic and steel containers
- Large quantities, 5 gallons or more: steel containers
- Other names: *Aluminum*

### Hazards

- Extremely flammable
- Contact with water may generate flammable gases
- Contact with acids or chemicals rich in oxygen may produce dangerous chemical reactions

### Commercial Uses

- Paints
- Pyrotechnics
- Manufacture of engines, cars, structural members, etc.



*Aluminum Powder*



*Typical Chemical Supply Packaging*



*Example Commercial Product Packaging*

- Spherical pellets (prills), granular, crystalline, or powder
- Colorless or white
- Odorless
- Small quantities, up to 5 gallons: plastic or glass containers
- Large quantities, more than 5 gallons: plastic or paper bags
- Other names: *Nitrate of Ammonium*



*Typical Chemical Supply Packaging*

## Hazards

- Eye, skin, respiratory irritant
- Ammonium nitrate by itself can be explosive
- Addition of powdered metals or fuels can be explosive



*Fertilizer-Grade Pellets (prills)*



*Explosive-Grade Pellets (prills)*

- Contact with acids, combustible materials, or flammable



- Crystalline
- White or colorless
- Odorless
- Small quantities, up



*Example Commercial Product Packaging*

- Liquid, syrupy, viscous
- Clear, colorless (pure chemical form)
- Odorless
- Small quantities, up to 5 gallons: glass or plastic containers
- Large quantities, more than 5 gallons: plastic or steel container
- Other names: *Glycol*, *Ethanediol*, *Monoethylene Glycol*



*Ethylene Glycol*

## Hazards

- Ingestion can cause blindness and death
- Mild eye, skin, respiratory irritant
- Contact with acids or chemicals rich in oxygen may produce dangerous chemical reactions
- Excessive heat and/or sunlight may degrade product



*Antifreeze*

### Commercial Uses

- Plastic manufacture
- Antifreeze
- Commercial explosives



*Example Commercial  
Product Packaging*

- Oily, viscous, sticky liquid
- Colorless

- Crystalline or solid
- White

- Liquid
- Colorless to light yellow to greenish-yellow
- Pungent, acid, sour odor
- Corrosive, leaves burn marks
- Will burn nose
- Makes eyes water
- Can emit chlorine gas
- Various concentrations available
- Small quantities, up to a gallon: glass or plastic containers (varies by concentration)
- Large quantities, up to 55 gallons: lined steel drums, plastic containers
- Other names: *Muriatic Acid*



*Typical Chemical Supply Packaging*

## Hazards

- Severe eye, skin, respiratory irritant (severity depends on concentration)
- Ingestion may cause death
- Corrosive
- Storage with substances other than acids, may produce adverse reactions



*Example Commercial Product Packaging*

## Commercial Uses

- Manufacture of plastics and some chemicals
- Cleaning products such as toilet bowl cleaners

## Chemical Components

# Hydrogen Peroxide $\text{H}_2\text{O}_2$

29

- Liquid
- Clear, colorless
- Slightly pungent, caustic odor
- Corrosive, leaves burn marks
- Whitens skin on contact
- Skin blisters
- Peels paint, bleaches items
- Various concentrations available
- Easily concentrates to higher levels
- Beautician grade may require state license to purchase
- Small quantities, up to a half gallon: glass or plastic containers (varies by concentration)
- Large quantities, 30 to 55 gallons: plastic, aluminum, or stainless steel drums (varies by concentration)
- Other names: *Dihydrogen Dioxide,*  
*Hydroperoxide*



*35% Concentration  
from Chemical Supply*



*50% Concentrations from Chemical  
Supply in Various Quantities*



## Hazards

- Eye, skin, respiratory irritant  
(severity depends on concentration)
- Inhaled vapors can cause

- Powder or solid
- Gray, black
- Odorless
- Small quantities, up to 5 gallons: plastic and steel containers
- Large quantities, more than 5 gallons: steel containers



*Magnesium Powder*

## Hazards

- Eye, skin, respiratory irritant
- Extremely flammable
- Contact with water releases flammable gases

## Commercial Uses

- Manufacture of engines, cars, structural members
- Pyrotechnics



*Typical Chemical Supply Packaging*

- Liquid
- Colorless
- Sweet, minty, acetone-like, agreeable odor
- Small quantities, up to 5 gallons: glass and metal containers
- Large quantities, 5 to 55 gallons: metal containers
- Dry or cracked skin
- Evaporates quickly
- Other names: *2-Butanone*, *MEK*



*Typical Chemical Supply Packaging*

### Hazards

- Extremely flammable
- Vapors can be explosive
- Vapors may be present in adjacent areas
- Eye, skin, respiratory irritant
- Vapors may cause drowsiness and dizziness
- Contact with chemicals rich in oxygen or caustic chemicals may produce dangerous chemical reactions

### Commercial Uses

- Paint removers
- Laboratory and industrial solvents
- Plastics manufacture



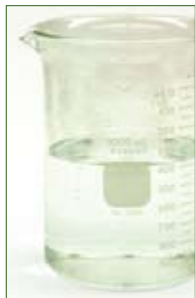
*Methyl Ethyl Ketone*



*Typical MEK Product Packaging*

- Liquid

- Liquid, oily
- Colorless
- Fruity, disagreeable odor
- Small quantities, up to 5 gallons: glass, metal, and plastic containers
- Large quantities, more than 5 gallons: stainless steel drums
- Other names: *Nitrocarbol*

*Nitromethane*

### Hazards

- Shock, static spark, flame, and other ignition sources may cause explosion
- Eye, skin, respiratory irritant
- May cause headache, shallow respiration, dizziness, vomiting, weakness, and fall in blood pressure
- Contact with strong acids, combustible materials, or chemicals rich in oxygen may produce dangerous chemical reactions
- Contact with copper may cause corrosion

### Commercial Uses

- Racing car fuel
- Remote control vehicle fuel
- Industrial solvent
- Propellants and explosives

*Example Commercial Product Packaging*

- Crystalline or powder
- White
- Odorless
- Small quantities, up to 5 gallons: glass or plastic containers, plastic baggies
- Large quantities, more than 5 gallons: sealed plastic bag inside a metal drum
- Other names: *Chlorate of Potash, Potassium Oxymuriate*



*Typical Chemical Supply Packaging*

## Hazards

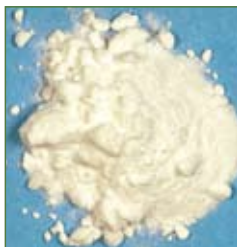
- Eye, skin, respiratory irritant
- Contact with metals, combustible materials, or flammable chemicals may produce dangerous chemical reactions

## Commercial Uses

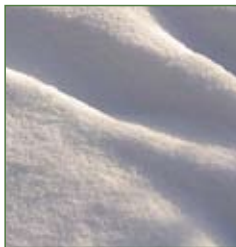
- Pyrotechnics
- Matches
- Herbicides
- Oxygen candles



*Matches*



*Potassium Chlorate Powder Close-up*



*Close-up of Potassium Chlorate*

- Crystalline, granular, or powder
- White
- Odorless
- Small quantities, up to 5 gallons: glass or plastic containers
- Large quantities, more than 5 gallons: sealed plastic bag inside a metal drum
- Other names: *Nitrate of Potash*, *Saltpeter*

### Hazards

- Eye, skin, respiratory irritant
- Contact with metals, combustible materials, or flammable chemicals may produce dangerous chemical reactions

### Commercial Uses

- Propellants
- Pyrotechnics
- Food preservatives (commercial)
- Fertilizers
- Stump remover (some)



*Typical Chemical Supply Packaging*



*Potassium Nitrate Close-up*





Close-up of Stump 0 23205 remove (per P)4 (elles)T 24116 00197 Close-up of S

- Solid or crystalline
- Dark purple, violet
- Odorlessviolet



*Iron Filter Close-up*



*Iron Filter*



*Example Commercial Product Packaging*

- Powder
- White, colorless, or light yellow

- Powder, chalky
- Yellow
- Odorless
- When heated, smells like rotten eggs
- Small quantities, up to

- Liquid, may be viscous
- Colorless
- Pungent, acrid odor
- Various concentrations available
- Small quantities, up to a gallon: glass or plastic containers
- Large quantities, more than a gallon: carbon steel, stainless steel, polyethylene containers
- Other names: *Vitriol*, *Oleum*, *Hydrogen Sulfate*

### Hazards

- Severe eye, skin respiratory irritant (severity depends on concentration)
- Severe skin burns
- Corrosive
- Contact with water, combustible materials, caustic, flammable, or oxygen-rich chemicals may produce dangerous chemical reactions



*Typical Chemical Supply Packaging*



*Drain Pipe Cleaners*

## Commercial Uses

- Drain pipe cleaners
- Automotive batteries
- Polymer manufacture
- Fertilizer manufacture
- Chemical manufacture
- Oil refining



*Car Battery Acid*

- Crystalline, granular, or powder
- White
- Ammonia-like odor
- Small quantities, up to 3 gallons: glass or plastic containers
- Large quantities, up to 50 pounds: sealed plastic containers or bags
- Other names: *Carbamide*, *Carbonyl Diamide*



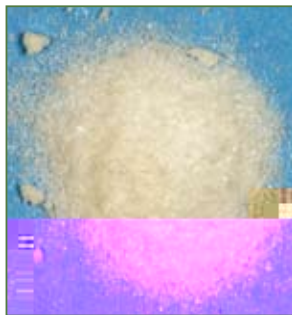
*Typical Chemical Supply Packaging*

### Hazards

- Eye, skin, respiratory irritant
- Contact with chemicals rich in oxygen may produce dangerous chemical reactions

### Commercial Uses

- Fertilizers
- Road de-icers
- Food supplement
- Manufacture of plastics



*Urea Close-up*

*Example Commercial Product Packaging*



## **MANUFACTURING EQUIPMENT**

The manufacturing equipment will depend on the homemade explosive. The equipment may

## MANUFACTURING EQUIPMENT



**Grinders** reduce the granule size of solid components and can be used in the production of homemade explosives.



**Mixers** physically blend components while **stirrers** combine liquid components. Either or both can be used in the production of homemade explosives.



*Blenders/Mixers*



*Magnetic Stirrers*



*Suspicious Buckets/Plasticware*

**Ice baths** cool mixtures that generate heat and can be used in the product and can be used with water. Ice water can be ice with salted



**Distillers** concentrate chemical components with low-level heat. Distillers may include complex scientific equipment or household items used in improvised methods.



*Coffee Pot*



*Improvised  
Distillation  
Column*



*Rotovap*

*Stovetop  
with Pot*



*Slow Cooker*

**Filters** separate the solids from the liquids and could be used in the production of homemade explosives.



*Coffee Filters*



*Coffee Filter Used with Funnel and Jar*



*Rubber Gloves*



*N95 Dust Mask and  
Vapor Mask*





*Safety Goggles*



*Face Shield*



*Flexible Dryer Vent Pipe*

